***MethodsX* methods article template***Version 3 (July 2022)*

**Before you complete this template**, a few important points to note:

* This template is for a methods article. If you want to describe a protocol or changes you’ve made to a protocol; for example, for use in a clinical or drug trial, please complete our [protocol article template](https://www.elsevier.com/__data/promis_misc/MethodsX-Protocol-Article-Template.docx).
* The format of a methods article is very different to a traditional research article. To help you write yours, we have created this template. **We will only consider methods articles submitted using this template**.
* Please consult the *MethodsX* [Guide for Authors](https://www.elsevier.com/journals/methodsx/2215-0161/guide-for-authors); it highlights mandatory requirements and is packed with useful advice. We have also developed a [step-by-step video guide](https://www.journals.elsevier.com/methodsx/about-methodsx/video-how-to-submit-your-methods-article-to-methodsx) to completing this template, designed to maximize your chances of acceptance.

**Still got questions?**

* Email our editorial team at [mexjm@elsevier.com](mailto:mexjm@elsevier.com)

Now you are ready to fill in the template below. As you complete each section, it’s important to read the associated instructions carefully. All sections are mandatory, unless marked OPTIONAL.

**Please delete this line and everything above it before submitting your article. In addition, we ask you to delete the instructions, including those featured in the Article Information and Specifications table.**

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Article information**

**Article title**

*Max. 20 words. The title should be unique. Avoid acronyms and abbreviations where possible.*

**Authors**

*List all authors. Please mark the corresponding author with (\*)*

**Affiliations**

*Please include the full address of each author institution*

**Corresponding author’s email address and Twitter handle**

*Institutional email address preferred. If you have a Twitter handle, please add it here ‘twitter: @....’*

**Keywords**

*List a minimum of three keywords to help others discover your article online****.*** *There is no maximum. Avoid repeating words used in your title.*

**Related research article**

*Supporting methods articles are methods articles that you submit alongside an original research paper.*

*If your methods article supports an original research article, please cite the associated research article here. You should only list one article.*

***For a published article:***

*J. van der Geer, J.A.J. Hanraads, R.A. Lupton, The art of writing a scientific article, J. Sci. Commun. 163 (2010) 51–59.* [*https://doi.org/10.1016/j.Sc.2010.00372*](https://doi.org/10.1016/j.Sc.2010.00372)

*If your methods article is* ***not related to a research article****, please delete this entire ‘Related research article’ row.*

**Abstract**

*Maximum length is 200 words.*  *Include 1-3 bullet points that outline your method – avoid the technical steps involved; these will be described later.*

**Graphical abstract**

*A graphical abstract is mandatory. The graphical abstract should summarize the contents of your article in a concise, pictorial form. Authors must provide images that clearly represent the work described in the article. Graphical abstracts should be submitted as a separate file. Image size:****please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more****. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files.*

**Specifications table**

|  |  |
| --- | --- |
| **Subject area** | *Please Select Subject Area from dropdown list* |
| **More specific subject area** | *Describe narrower subject area* |
| **Name of your method** | *Please write the name of the method you are describing in this article* |
| **Name and reference of original method** | *If applicable, list the full bibliographic details of any key reference(s) that describe the original method you customized* |
| **Resource availability** | *If applicable, include links to the resources necessary to reproduce your method (e.g., equipment, data, software, hardware, reagents).* |

**Method details**

*Our goal is to publish methods that can be replicated by other researchers. Please include enough information here to ensure that is possible.*

* *There is no word limit! You can include figures, tables, videos – anything you feel will help others reproduce your method.*
* *Focus on the technical steps required for this method rather than the results you achieved.*
* *Where appropriate, guide the reader through the procedure and provide extra observations or tricks you learned along the way.*
* *Results and Discussion sections are not included in the MethodsX format. However, providing data that validates the method is valuable and required – this can take the form of a “method validation” paragraph within this section.*

**Ethics statements**

*MethodsX has ethical guidelines that all authors must comply with. In addition, we ask you to complete the relevant statement(s) below. Please delete those which are not relevant to your work.*

***If your work involved human subjects,*** *please include a statement here confirming that the relevant informed consent was obtained from those subjects:*

***If your work involved animal experiments,*** *please**include a statement here confirming that those experiments complied with the*[*ARRIVE guidelines*](https://www.nc3rs.org.uk/arrive-guidelines)*and were carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines;*[*EU Directive 2010/63/EU for animal experiments*](http://ec.europa.eu/environment/chemicals/lab_animals/legislation_en.htm)*; or the National Institutes of Health guide for the care and use of laboratory animals (NIH Publications No. 8023, revised 1978). Note, the sex of the animals must be indicated, and, where appropriate, the influence (or association) of sex on the results of the study:*

***If your work involved data collected from social media platforms****, please include a statement here confirming that a) informed consent was obtained from participants or that participant data has been fully anonymized, and b) the platform(s)’ data redistribution policies were complied with:*

**CRediT author statement**

*CRediT is an initiative that enables authors to share an accurate and detailed description of their diverse contributions to a published work.*

*Example of a CRediT author statement:*

***Zhang San:****Conceptualization, Methodology, Software****Priya Singh****: Validity tests, Data curation, Writing- Original draft preparation.****Wang Wu****: Visualization, Investigation.****Jan Jansen:****Supervision.* ***Ajay Kumar****: Software, Validation.:****Sun Qi:****Writing- Reviewing and Editing.*

*Please add a CRediT author statement for your method article here, using the* [*categories listed on this web*](https://www.elsevier.com/authors/journal-authors/policies-and-ethics/credit-author-statement)*page.*

**Acknowledgments**

*All contributors who do not meet the criteria for authorship should be listed in an acknowledgments section.*

*In addition, please list any funding sources in this section. List funding sources in this standard way to facilitate compliance to funder's requirements:*

*Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].*

*It is not necessary to include detailed descriptions of the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.*

*If no funding has been provided for the research, please include the following sentence:*

*This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.*

**Declaration of interests**

*Please* ***tick*** *the appropriate statement below (please do not delete either statement) and declare any financial interests/personal relationships which may affect your work in the box below.*

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

*Please declare any financial interests/personal relationships which may be considered as potential competing interests here.*

**Supplementary material *and/or* additional information [OPTIONAL]**

*You may also submit supplementary material with your article. This is not compulsory. If you do submit supplementary files, you are welcome to provide supporting details in this OPTIONAL section. More information is available in the* [*Guide for Authors*](https://www.elsevier.com/journals/methodsx/2215-0161/guide-for-authors)*.*

* ***Supplementary material*** *relates directly to the work that you have submitted and can include extensive Excel tables, raw data etc. We also encourage you to include failed methods or describe adjustments to your methods that did not work.*
* ***Additional information*** *can include anything that is not directly related to your method, e.g., more general background information, useful links etc. As the methods article format doesn’t feature an introduction, you might want to use this section to highlight information you would typically include in your introduction.*

**References**

*If your methods article is about a customization you made, include at least one reference to the original publication of that method.*

***Reminder: Before you submit, please delete all the instructional text in dark blue, wherever it appears – including here.***

***Thank you!***